

REMARKS

Claims 1 to 15 are all the claims pending in the application, prior to the present amendment.

Claim 7 has been rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent 5,364,681 to Pate et al.

In addition, claim 9 has been rejected under 35 U.S.C. § 103(a) as obvious over Pate et al.

Applicants submit that Pate et al do not disclose or render obvious the subject matter of claim 7 as amended above and, accordingly, request withdrawal of this rejection.

The present invention as set forth in claim 7 as amended above is directed to a decorative multilayer material comprising a breathable decorative layer and a breathable material laminated onto one of the surfaces of the breathable decorative layer, wherein a breathable sheet or film having through holes is interposed between the breathable decorative layer and the breathable material, and wherein the diameter of the through holes is from 0.5mm to 10mm.

Thus, applicants have amended claim 7 to state that the diameter of the through holes of the interposed breathable layer is from 0.5mm to 10mm. Support for this amendment can be found at page 29, last paragraph of the specification. Applicant has canceled claims 9 and 17 in view of this amendment.

Pate et al disclose, in Figure 1, a three-ply acoustic lamina comprised of a woven fabric layer 12, a fabric backing layer 40, and a thermoplastic binder layer 30 interposed between the woven fabric layer 12 and the fabric backing layer 40.

The thermoplastic binder layer of Pate et al is in a position corresponding to the interposed breathable sheet or film of the present invention, but does not suggest the interposed breathable sheet or film of the present invention because Pate et al do not disclose or suggest the size of the through holes.

The Examiner has recognized that Pate et al do not disclose the size of the apertures in the thermoplastic binder layer (film). The Examiner asserts that Pate et al disclose that the openings are formed in the thermoplastic binder layer (film) by heating the film, and then passing the laminate through rollers which exert heat and pressure onto the layers. The Examiner states that Pate et al disclose that the voids should be controlled so that they are less than 30% of the area of the laminate. The Examiner refers to the disclosure at columns 5 and 6 of Pate et al.

The Examiner argues that it would have been obvious to have selected the size and number of apertures through routine experimentation by controlling the temperature and pressure exerted by the laminating rollers, in order to arrive at a laminate having the desired opening size and number.

In response, applicants submit that the Examiner is wrong in her assertion that the opening size can be selected and arrived at “through the process of routine experimentation by controlling the temperature and pressure exerted by the rollers.”

The fabric backing layer 40 of Pate et al is described at column 4, lines 54-56 as being a layer which is made porous and through which air and moisture can freely pass.

The woven fabric layer 12 of Pate et al is formed by threads 14 and has openings 16, and serves as an acoustical layer. Pate et al disclose at column 3, lines 24-32, that the individual threads are preferably coated with a thermoplastic coating composition, preferably a plastisol. Pate et al disclose at column 3, line 63 to column 4, line 4, that upon coating of the woven fabric, a significant number of the openings are not blocked and that, generally, from about 35% to about 65% of the total surface area of the woven fabric layer, after deposition of the plastisol, is open. The woven fabric layer can be printed to form decorative patterns, as disclosed at column 4, lines 5-10.

In addition, Pate et al disclose, at column 5, lines 45-48, that during the laminating operation, the thermoplastic film (thermoplastic binder layer 30) flows and becomes discontinuous, leaving holes and openings through which air and moisture can permeate. Pate et al disclose, at column 5, lines 53-61, that air can penetrate the acoustical layer, the binder layer and the non-woven fabric layer.

Pate et al contain the following disclosures with respect to the thermoplastic binder layer and the formation of openings or holes in this layer.

The thermoplastic polymer binder is a discontinuous, indiscrete layer which is generally, but not completely nor uniformly, situated between the two fabric layers. The discontinuities such as apertures, spaces, openings, etc., in the thermoplastic polymer binder are formed during the laminating step of the fabrication of the acoustic lamina.

Column 1, lines 61-67

...During the laminating process the three layers are exposed to elevated temperatures and pressures which cause the material of the thermoplastic polymeric film layer to melt and flow into and around openings or pores in the fabric layers and thereby adhere or bind the fabrics together when the thermoplastic material re-solidifies. Also during the lamination process, as the material of the thermoplastic film flows into the fabric layers,

the thermoplastic binder becomes discontinuous so that air and moisture will pass through and easily permeate the lamina.

Column 2, lines 60-column 3, line 2

...Methods and apparatus for laminating sheet materials at elevated temperatures and pressures are well known to the art and to the literature and generally comprise the steps of unrolling and bringing together the individual sheets in overlaying or superimposed relation and passing the juxtaposed sheets through a pair of laminating rollers which heat and exert high pressures on the sheet material, causing the thermoplastic binder to melt and flow into the fabric layers to bind them together upon cooling and re-solidification of the thermoplastic. During the laminating operation the thermoplastic film flows and becomes discontinuous leaving holes, openings, etc., through which air and moisture can permeate, as noted above.

Column 5, lines 45-48.

...Woven fabric layer 12 is bound to fabric backing layer 40 through thermoplastic binder 30 in a manner as described hereinabove. Inasmuch as binder layer 30 flows into both the woven and nonwoven fabric layers, discontinuities, openings, apertures, etc., exist such that, as noted above, paste from the back side of layer 40 generally cannot penetrate the binder layer and yet air can penetrate the acoustical layer, the binder layer, as well as the nonwoven fabric layer.

Column 5, lines 53-61.

As can be seen from the above disclosures of Pate et al, the openings or holes formed in the thermoplastic binder layer of Pate et al result from the melting and flowing of the thermoplastic binder layer into the two adjacent fabric layers during the laminating step. Such a process results in a happenstance or uncontrolled formation of discontinuities in the thermoplastic binder layer as a result of the melting, flowing and cooling of the thermoplastic binder and its interaction with the movement of air during the process. There is no disclosure or suggestion in Pate et al of any step or mechanism to produce through holes of a specified diameter.

With respect to the Examiner's reference to columns 5 and 6 of Pate et al, Pate et al, at column 6, lines 10-30, state that the "void openings of the entire laminate is generally less than 30 percent." (Emphasis added.) This disclosure of Pate et al, however, is directed to the entire laminate, and not to the interposed breathable layer, and contains no disclosure or suggestion of the size of the holes in any of the individual layers or the size of the through holes of the interposed breathable layer.

Applicants submit that it is not possible to make a pre-determined size and shape of through holes by just controlling the temperature and pressure exerted by the rollers. Applicants submit that the formation of the discontinuities in Pate et al is an uncontrolled happenstance event that is not assured in terms of size, shape and other characteristics of the discontinuities.

Further, applicants submit that since Pate et al do not disclose a desired opening size and number, the Examiner is employing hindsight when she asserts that it would have been obvious to control temperature and pressure to arrive at a laminate having a desired opening size and number.

In the making of the decorative multilayer material of the present invention, on the other hand, the size of through holes in the interposed breathable sheet or film is mainly controlled by the process prior to a laminating step, and not by the accidental air movement, or by a specific means which controls size, such as needle punching during the laminating step.

In Examples 17-19 and 21 of the present specification, through holes of 3 mm and 5 mm in diameter were formed before a laminating step, and in Examples 20 and 22, through holes of 1 mm and 0.5 mm were formed by needle punching during the laminating. Thus, the resulting

multilayer material after the laminating step has a film or sheet with a defined size of through holes.

In the present invention, a multilayer material containing an interposed breathable sheet or film having thorough holes with a diameter of 0.5 mm to 10 mm is provided. The multilayer material of the present invention thus exerts excellent effects, such as having an excellent acoustic absorption rate at the frequency of 4000 Hz or more, as clearly disclosed in Examples 17-22. See Table 6 at page 66 of the present specification.

Therefore, since Pate et al (i) do not disclose or suggest means to control the size of the through holes, (ii) do not disclose or suggest the size of through holes of the present invention, and (iii) do not disclose or suggest the significant and excellent acoustic absorption effect of the present invention, applicants submit that one of ordinary skill in the art would not have been motivated to provide the claimed size of through holes for a purpose which is not included in Pate et al.

In view of the above, applicants submit that Pate et al do not disclose or render obvious the subject matter of claim 7 and, accordingly, request withdrawal of this rejection.

Claim 8 has been rejected under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Pate et al.

Claim 8 depends from claim 7. Applicant submit that claim 8 is patentable over Pate et al for the same reasons as discussed above in connection with claim 7.

In view of the above, applicants submit that Pate et al do not disclose or render obvious the subject matter of the claim 8 and, accordingly, request withdrawal of this rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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